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10/686,337	10/16/2003	Michael H. Gurin		7199

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EXAMINER

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT

PAPER NUMBER

1751

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/686,337

Applicant(s)

GURIN, MICHAEL H.

Examiner

Kallambella Vijayakumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-22 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Detailed Action

- This application is a CIP of SI. No. 10/642,860 filed 08/18/2003. The instant claim limitation "electrides and alkalides" does not find support in the parent application, and hence the instant application gets the priority as of its filing date of 10/16/2003.
- Claims 1-22 are currently pending with the application.

Claim Objections

Claim 16 objected to because of the following informalities: The claim depends on itself.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-4, 7-10, 13, 16, 18-19 and 21-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- Claim 1 recites the limitation of "the group" in Line-2 and Line-5 and there is insufficient antecedent basis for this limitation in the claim.

It is suggested to amend the claim to "a group consisting of" to overcome this rejection.

- Claims 2-3 recite the limitation of "The conductive medium according to claim-X" in Line-1 and there is insufficient antecedent basis for this limitation in the claim.

It is suggested to amend the claim to "An enhanced composite according to claim-X, wherein the conductive medium" to overcome this rejection.

- Claim 4 recites the limitation of "The electrides and alkalides according to claim-1" in Line-1 and there is insufficient antecedent basis for this limitation in the claim.

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It is suggested to amend the claim to "An enhanced composite according to claim-1, wherein the alkalides and electrides" to overcome this rejection.

- Claim 4 recites the limitation of "the group consisting of" in Line-2 and there is insufficient antecedent basis for this limitation in the claim.

It is suggested to amend the claim to "a group consisting of" to overcome this rejection.

- Claim 4 recites the limitation of "the powder" in Line-4 and there is insufficient antecedent basis for this limitation in the claim.
- Claims 7-9 recite the limitation of "the group" in Line-2 and there is insufficient antecedent basis for this limitation in the claim.

It is suggested to amend the claim to " a group consisting of" to overcome this rejection.

- Claims 8-10 recite the limitation of "The quantum energy transfer solution" in Line-1 and there is insufficient antecedent basis for this limitation in the claim.

It is suggested to amend the claim to "An enhanced colloidal solution of claim-7, wherein the quantum energy transfer solution" to overcome this rejection.

- Claims 10 and 13 recite a limitation of "the group" in Line-3 and there is insufficient antecedent basis for this limitation in the claim.

It is suggested to amend the claim to " a group consisting of" to overcome this rejection.

- Claim 16 recites the limitation of "The self-assembly additive" in Line-1 and there is insufficient antecedent basis for this limitation in the claim.

It is suggested to amend the claim to "An enhanced colloidal solution of claim-1, wherein the self-assembly additives" to overcome this rejection.

- Claims 18-19 recite the limitation of "The products" in Line-1 and there is insufficient antecedent basis for this limitation in the claim.

It is suggested to amend the claim to "An enhanced nanocomposite according the claim-1, wherein products " to overcome this rejection.

- Claims 21-22 recite the limitation of "The products" in Line-1 and there is insufficient antecedent basis for this limitation in the claim.

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It is suggested to amend the claim to "An enhanced colloidal solution according the claim-1, wherein products " to overcome this rejection.

- Claims 1, 4 and 8 recite the limitation of "carbon products", and the specification or the claims provide no direction as what are encompassed by this limitation. A broad interpretation of carbon products include organic material, and public will not be appeased about the boundaries of this limitation.
- Regarding claim-4, it recites the limitation "The electrides.....with a nanoscale layer from.... The powder....nanometers" and it is not clear from the disclosure whether the electrides/alkalides are surface modified with a metal etc...layer or a metal etc is surface modified with a nanoscale layer of an electride/alkalide, and public will not be appeased about this limitation.
- Regarding claim-12, a multiple dependent claim may refer in the alternative to only one set of claims. It is suggested to depend this claim on claim 11 to overcome this rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Applicant does not provide the definition of "Alkalide and Electride" in the specification or the claims, and the applicants Cu-ammonia complex cited in the example (Specification) does not meet the traditional definition of an electride or alkalide. Hence, the examiner construes their meaning from the art to be: An alkalide to be a complex of the type $A^+(\text{complexant}) B^-$ wherein A and B are alkali metal ions

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and complexant is a cryptand, crown ether, aza-crown or diketone, and an electride is an alkali **presumed** to have been simply an electron that is localized to a region of the crystal between the complexed cations (Report from Michigan State University, Dept of Chemistry). Also see Edelson (US 5,810,980, Col-1, 60 to Col-2, Ln 10), Dye et al (US 5,453,297, Col-5, Ln 6- Col-6, Ln 26), and Lipens et al (US 4,755,536; C-3, Ln 19-36).

1. Claims 1-5, 7-10, 12-14 and 20-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Lipens et al (US 4,876,032).

Lipens discloses a dispersion comprising a solution of silver particles <conductive medium> obtained by the reduction of silver nitrate with terephthaldehyde in a solution of polyphenylquinoxaline <conductive medium> and silver particles complexed with crown ether <electride> (Col 3-4, Example-3) that meets the limitation of an enhanced colloidal solution in claim-7. With regard to an enhanced nanocomposite in claim-1, the prior art teaches forming a film from the dispersion. The particle size of the electride in the prior art composition will be inherent, because the prior art composition is identical to that by the applicants and identical composition have identical properties and characteristics. Furthermore, Dye et al teach forming angstrom sized metal particles in presence of electrides/alkalides (US 5,453,297, Abstract), whereby formation of nanoscale metal particles in the prior art composition, and formation of nanoscale layer of electride over the metal particles <functionalized> per claims 2-4 will be anticipated. With regard to process claims 5 and 13, the examiner asserts that the prior art composition will be identical to that obtained by treating with the applicants process step. The prior art dispersion is identical to that by the applicants and having identical nanoparticle sizes and meets the limitation of a quantum energy transfer solution in claim-7. The angstrom sized metal particles further meet the limitation of claims-8 and 12. With regard to claims 9-10, the prior art teaches the addition of crown compound complexing agent. With regard to claim-14, the prior art composition is identical to that by the applicants, and the claimed solvated electron property will be inherent because identical compositions have identical properties. The conductive high temperature stable film of the prior art meets the limitation of product in the claim 20 and

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the examiner asserts that the prior art product will be identical to that obtained by subjecting to process treatment in claim 21. All the limitations of the instant claims are met.

The reference is anticipatory.

2. Claims 1-5, 7-18 and 20-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Pialet (US 5,558,811).

Pialet et al teaches an electro-rheological fluid comprising: (a). carbon based hydrophobic base fluid such as paraffin, (b). active components dispersed therein : (b1). Semiconductive polymers such as polyaniline, (b1). Inorganics such a metals and carbonaceous powders, (b2). Active solid materials such as phthalocyanine and crown ethers, (b3). Polar active materials such as ethanolamine and surfactants. The components (a) and (b1)- meets the limitation of the conductive material, (b2)- meets the limitation of an electride/alkalide and functionalizing agent, and (b3)- meets the limitation of a surfactant/ functionalizing agent/self-assembly forming additive in the claims (Abstract, C-2, Ln 40-50; C-3, Ln 1-12; C-4, Ln 7-12, 15-57; C-5, Ln 3-9, 30-36, 52-54; C-8, Ln 35-38, 49-52, 60-67; C-9, Table-1). The dispersion meets the limitation of an enhanced nanocomposite in claim-1 and an enhanced colloidal solution in claim-7. Regarding the particle sizes in claims 1 and 7, and quantum dots in claim-12, the prior art teaches the addition of polyaniline and the components with a particle size of 0.25-100 microns (C-5, Ln 52-54). With regard to nanoscale layers in the claims, the prior art teaches adding 0.1-10 wt% polar activating material (C-8, Ln 35-38). With regard to process in claims 5 and 13, the examiner assert that the prior art composition will be identical to that obtained by treating with the applicants process step. With regard to claims 17 and 20, the prior art teaches clutches comprising the electro-rheological fluid (C-1, Ln 21-25). With regard to the treatment steps in claims 18 and 21, the examiner asserts that the prior art product will be identical to that obtained by subjecting to process treatment in the claims. All the limitations of the instant claims are met.

The reference is anticipatory.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 17-19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liepens et al (US 4,876,032) in view of (Report # A4000763, Rochester Univ. NY. Dept. Chem. Eng., dated 16-Aug-1999).

The disclosure on the composition by Liepens et al as set forth in rejection-1 under 35 USC 102(b) is herein incorporated. The prior art further teaches enhanced stable conductivity of the films (Col-5, Table 2 and 3).

The prior art is silent about the making the product per the claims.

In the analogous art, Cui et al teach using the conductive polyphenylquinoxaline in the electroluminescent devices, wherein polymer is the same polymer used by Liepens.

It would have been obvious to a person of ordinary skill in the art to fabricate the electroluminescent devices using the conductive films of Liepens et al with reasonable expectation of success, because it was customary to build such devices using polyphenylquinoxaline films at the time of the disclosure of the invention by the applicants as taught by Cui et al, and the combined prior art disclosure is suggestive of the claimed product. The examiner further asserts that the prior art product will be similar to that obtained by the process treatment in claim 18.

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Allowable Subject Matter

Claim 6 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Prior art or record neither teaches nor fairly suggest a nanocomposite comprising alternating nanoscale doped layers comprising conductive additives and semiconductor additives.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on 8.30-6.00 Mon-Thu, 8.30-5.00 Alt Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas McGinty can be reached on 571-272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KMV
June 09, 2006.


Mark Kopec
Primary Examiner